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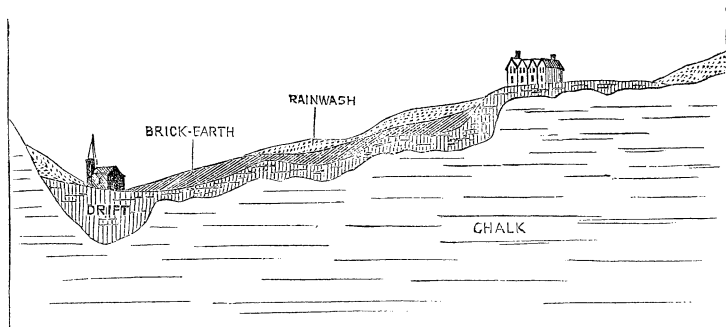
the neighbourhood of Abbeville, and stated that the bed at Moulin-Quignon was referable to the former, or earlier division of the series.

Professor GEORGE BUSK, F.R.S., then read the following paper:

Notes on some Human Remains found at Luton, near Chatham.
By GEORGE BUSK, F.R.S.

When my attention was first drawn by Dr. Hunt and Mr. Carter Blake to the bones, on which the few following observations are offered, it was supposed by the Rev. Mr. Rivers, through whom they had been forwarded to the Anthropological Society, that they had been imbedded in the *brick-earth*, or superficial alluvial or fluvial deposit covering the drift gravel which fills the bottom of the Vale of Luton, near Chatham. Had this really been the case, the bones would of course be of the very highest interest.

The observations and inquiries, however, of Mr. Hughes, an officer of the Geological Survey, have since shown beyond doubt that the remains in question were lodged, *not* in the brick-earth, but in a more superficial soil, brought down by the weathering and rain-wash of the hill side, and filling up the hollows on the surface of the brick-earth,* as shown in the accompanying diagram, prepared by Mr.



Hughes, from whose letter to Professor Ramsay the following extract will make this part of the subject quite clear: "I have not," he says, "the least hesitation in stating that they were in the rain-wash or run of the hill, and *buried in that*. They were found at a depth of about six feet, in the bed marked (a). The soil above them was mixed with black mould and disturbed, as if there had been a pit there. Two large stones were found between the skeletons, as if they had been thrown in after them. One of these, I was informed, was rag-stone, the other a piece of sand-stone, similar to that frequently found in the gravel."

The interest, therefore, that would have attached to the bones, had they been of an antiquity at all commensurate with that of the brick-earth, no longer appertains to them.

But although this special interest is wanting, the remains, and more especially the crania, nevertheless present several points of some interest, and it is upon these I now proceed to remark.

* A "*terrain meuble sur des pentes*" of M. Elie de Beaumont.

The skulls, as the figure will show (figs. 1 and 2), are very

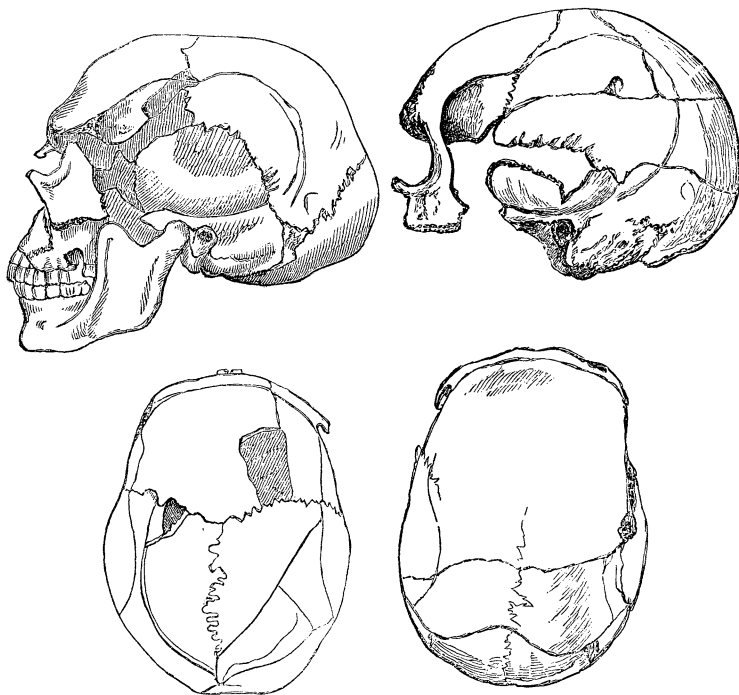


Fig. 1.

Fig. 2.

much alike in all essential characters, a circumstance usually observable in crania belonging to very ancient and comparatively unmixed races. They are dolichocephalic, orthognathic, but at the same time phænozygous;* of an elegant ovoid contour in the vertical view, and perfectly symmetrical. Their dimensions, as far as the broken state of the bones allowed of their being taken, are as under :

Crania.	Longitude.	Breadth.	Height.	Least frontal.	Greatest frontal.	Parietal.	Occipital.	Zygomatic.	Frontal radius.	Vertical radius.	Parietal radius.	Occipital radius.	Maxillary radius.	Fronto-nasal radius.	Circumference.	Longitudinal arc.	Frontal do. do.	Parietal do. do.	Occipital do. do.	Frontal transverse arc.	Vertical do. do.	Parietal do. do.	Occipital do. do.	Cranial index
No.1	7.3	5.3	5.5	3.65	4.35	4.8	4.5	—	4.3	4.4	4.6	4.25	4.05	3.6	20.0	4.7	4.6	5.0	14.3	11.3	11.9	12.55	11.6	.7
No.2	7.3	5.05	—	3.6	—	4.4	4.0	—	4.3	4.45	4.75	4.2	—	3.6	20.0	—	4.9	4.7	—	11.6	12.2	12.9	12.0	.6

* In certain crania, viewed on the vertical aspect, the zygomatic arches can be seen projecting more or less on the sides, whilst in others these processes are wholly concealed. For the former condition I venture to propose the term "*phænozygous*," and for the latter "*aphænozygous*."

In No. 1, which alone is furnished with the lower jaw, that bone has its angle everted; the teeth are in very perfect condition, and betoken a man in the prime of life or early manhood. The mastoid processes and muscular impressions in both crania are well developed. The frontal sinuses capacious, and the supraorbital ridges prominent. The lambdoidal sutures are complex, but there are no wormian bones.

In the absence of all extraneous evidence, beyond what the site and mode of their sepulture may afford, we have no guide in the condition or conformation of the bones themselves, to anything more than a conjecture with respect to the age to which they belong. Their condition shows a long residence in the ground, and proves that the skeletons have remained undisturbed in their resting place. In form they do not belong to either of the two more ancient types of crania found in Britain, viz., the cymbecephalic, supposed by Dr. Wilson to be the most ancient, and the brachycephalic, considered by the learned authors of the *Crania Britannica* as the true ancient British form. But besides this, on examination of the bones themselves, before I was informed of Mr. Hughes' account of the true nature of the ground in which they were buried, I saw sufficient evidence to prove that they had in all probability belonged to individuals living at a time when sharp metallic weapons were in use, and therefore, that all question of their belonging to the stone period, or even to that in which the only metal was bronze, might be dismissed. Both the individuals to whom the skulls belonged appear, in fact, to have been killed by sword cuts on the head. No. 1 seems to have received two cuts meeting at an acute angle behind the vertex, and also a downward cut, which has shaved off the left external angular process of the frontal bone, the edge of the weapon, which was slightly notched or hacked, also glancing off and removing a very thin slice from the surface of the squamous part of the temporal bone on the same side. The malar bone has also been broken by the force of the blow. No. 2 was probably slain by a single cut on the right side of the head, causing a straight incision through the frontal and parietal bones, extending from the temple to above the ear. The skull in this case also appears to have been broken in or smashed by some blunt instrument, such as a club or mace, or large stone, etc. And it is not, therefore, very unlikely that one or other of the two large stones found with the skeletons was the agent by which this injury was inflicted either immediately before or after death. From the direction, and situation of the cuts on the top of the head, it may be supposed that they were given from above, when the victims were upright; and I therefore imagine that they were slain by an opponent or opponents on horseback.

Another point worth attending to in these bones, as in all old bones perhaps, is the amount and kind of chemical change they have undergone—a subject to which, notwithstanding the attention that has been devoted to it, still requires very considerable elucidation. The shortest way of showing the comparative change in the Chatham bones, will be to place their analysis in a table, with that of some other bones, either fossil or of considerable but uncertain antiquity. The following are the only ones I have myself as yet had time or opportunity to examine.

Constituents 0/00.	Organic matter.	Carbonates.	Phosphates, etc., etc.	Foreign Elements.
Recent human bone (humerus)....	32.6	8.3	60.	
Chatham (loam, etc.)	16.	17.	67.	Much iron.
Lewisham (chalk)	9.5	10.2	81.	Iron.
Leicester (gravel under a house) ..	21.05	14.7	64.1	Iron.
Mewslade (ochreous loam)	25.	8.0	68.	Iron.
Gallo-Roman, St. Acheul (sand) ..	30.	7.?	63.	Iron.
Danish kitchen-midden (animal?) (pebbles)	16.5	13.5	70.	Iron.
Mesnières (ferruginous gravel)	9.0	7.7	83.3	Iron, abundant.
Menhecourt (fossil, sand).....	8.	14.	78.	Iron; fluorine.
St. Acheul (fossil, gravel)*.....	8.?	18.	74.	Iron, abundant; fluorine.
El. primigenius: (coprolite beds)+...	5.0?	8.0	87.0	Iron very abundant in form of sulphuret; fluorine.

The list is of course too meagre to serve as the basis for any general consideration respecting the posthumous chemical changes in bone. I shall, therefore, with reference to it merely remark, that it appears probable: 1. That in almost all cases, whatever the soil or situation, long-buried bones contain a notable amount of *iron*; 2. That the amount of organic matter is invariably much diminished; 3. That the proportion of carbonates is usually much augmented; 4. That a still longer abode in the ground, whatever the soil, is attended with the acquisition of a marked quantity of *fluorine*, as has been often shown before.

Mr. BLAKE paid a high tribute of admiration to Professor Busk for the ingenious manner in which he had put together the fragmentary remains which at an early period had been placed on the Society's table [*Anthropological Review*, p. xi], and complimented him on the lucid manner in which he had deduced the age and conditions of deposit.

Mr. CHARLESWORTH suggested the great value of investigating the chemical conditions of fossil before determining their geological age. In the Crag deposits the bones look recent, but the amount of animal matter contained in them is no proof of their geological age.

Professor BUSK pointed out that the bones in the Crag contained a large quantity of fluorine, much more than in the bones from Abbeville.

An animated conversation then ensued respecting the genuineness of the human jaw from Abbeville, in which Professor Busk, Mr. C. C. Blake, Mr. Charlesworth, Mr. Hogg, Mr. Pengelly, and the President took part.

* The St. Acheul bone, though losing the above weight by incineration, is not charred, nor does it afford the odour of burnt animal matter.

+ A considerable evolution of sulphur on incineration.